

**NOVEL METHODS TO PROBE THE SEQUENCE AND
STRUCTURE OF DNA AND RNA, Sharisa Holliday, Robert P. Dixon***
Department of Chemistry, Southern Illinois University Edwardsville,
Edwardsville, Illinois 62026 rdixon@siue.edu

It has been determined that variations in DNA secondary structure along the double strand play key roles in the regulation of gene expression in certain genomes. This talk will outline an approach to probe both the sequence and secondary structure of the various isoforms of DNA by synthesizing bipyridyl ligands with amino acid side chain functionalities, of varying tether lengths, with potential hydrogen bond donating and accepting. These amino acid side chain functionalities include the primary amide from asparagine and glutamine, and the guanidinium found in arginine. These functionalities have unique hydrogen bond donor and acceptor functionalities which, upon binding to DNA in their enantiomeric forms, may show sequence specificity due to unique interactions with the base pairs of DNA within the major groove. The ability of these receptors to photocleave strands of DNA, with subsequent separation of the products, will enable one to determine the sequence and structural specificities of the complexes.